

NAME \_\_\_\_\_

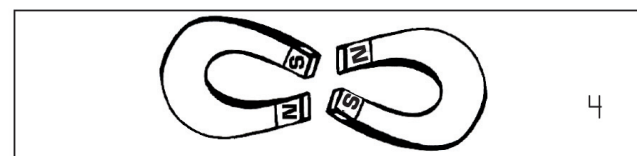
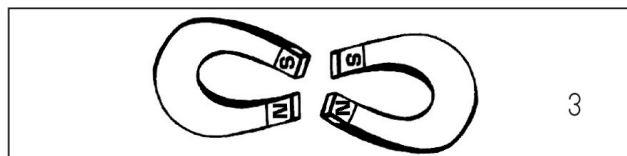
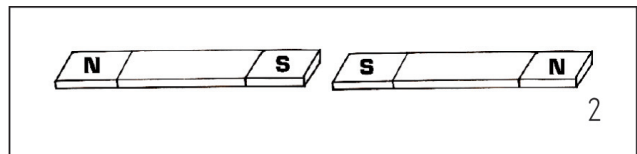
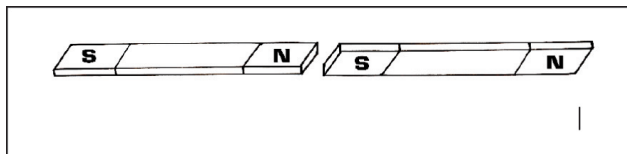
DATE ► \_\_\_\_\_

1. Sam is a student. He is studying electricity. Which is a safe source of energy to use?

- A. Lightning storms
- B. An electrical transformer
- C. Household current
- D. D-cell batteries

2. Dan is studying magnets of all shapes and sizes. Where is the force strongest?

- A. At the center
- B. At the poles
- C. Any flat edge
- D. Any flat surface



3. Which of these pairs do you expect to push apart?

- A. 1 and 2
- B. 2 and 3
- C. 3 and 4
- D. 4 and 1

4. An electric generator changes mechanical energy into electricity. Which best describes what you expect to find in an electric generator?

- A. Horseshoe magnets
- B. Ring magnets
- C. Round magnets
- D. Spinning magnets

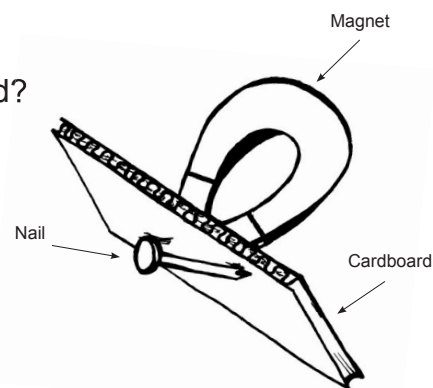
5. Which of these are electrical receivers?

- A. Car body, paint
- B. Headlights, radio
- C. Gasoline, battery
- D. Tires, wheels

USE THE DRAWING TO ANSWER QUESTIONS 6, 7 and 8.

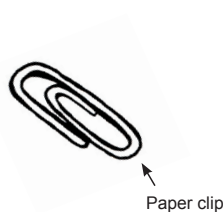
6. Which is evidence that magnetic force goes through cardboard?

- A. Horseshoe magnets are very strong
- B. The paper clip is "stuck" to the nail
- C. Two poles are touching the cardboard
- D. The nail is "stuck" to the cardboard



7. What happens when the cardboard and nail are moved closer to the paper clip?

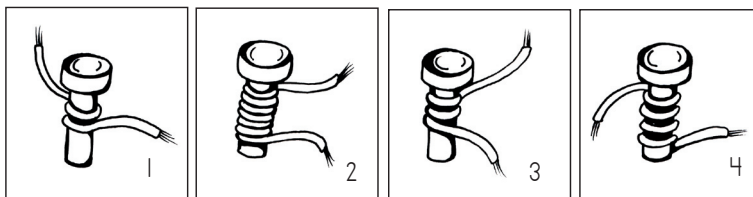
- A. The cardboard will fall off
- B. The nail will fall off
- C. The paper clip sticks to the nail
- D. The paper clip is pushed away



8. Look at the drawing. Which is the temporary magnet in this system?

- A. Nail
- B. Cardboard
- C. Paperclip
- D. Horseshoe magnet

LOOK AT THE DRAWINGS.



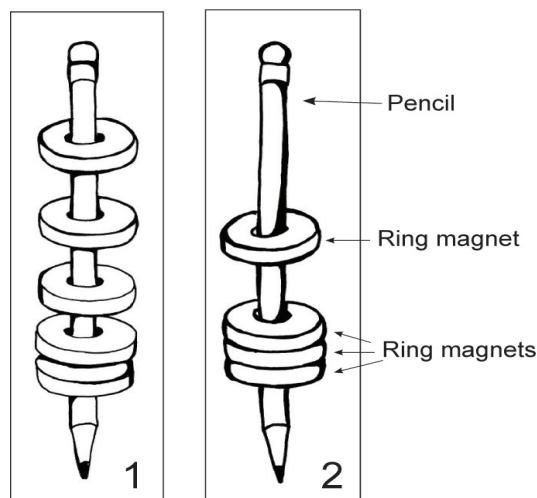
9. Kayla built an electromagnet. The bolts are the same size. Which has the strongest magnetic field?

- A. 1
- B. 2
- C. 3
- D. 4

10. Mark is using an electromagnet to pick up metal washers. The washers fell off. Why?

- A. The flow of electricity stopped
- B. The wire became too hot
- C. The washers need to be turned over
- D. The wire can only be used one time

LOOK AT THE DRAWINGS.



The magnetic poles are on the flat side of ring magnets.
When like poles are together the rings push apart. <b>1.</b>

Ring magnets have a hole in the center.
It is easy to make ring magnets float on a pencil. <b>2.</b>

Magnets push in all directions. Ring magnets don't have poles.
<b>3.</b>

Ring magnets only push apart. They don't pull together.
It is fun to put them on a pencil. <b>4.</b>

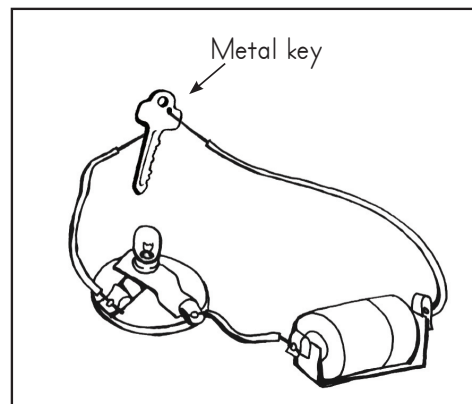
11. Which best explains how ring magnets seem to “float” on the pencil?

- A. 1
- B. 2
- C. 3
- D. 4

12. Look at the circuit.

Would you expect the bulb to light?





- A. No, both wires must touch the battery
- B. No, the key is an insulator
- C. Yes, if another battery is added
- D. Yes, the circuit is complete



## Ben's Science Notebook

<b>Ben's Question:</b> Which magnet has the strongest pull?
<b>Materials:</b>
• Ring magnet
• Marble magnet
• Bar magnet
• Horseshoe magnet
• Paper clip, 4cm long
• Metric ruler
<b>Procedure:</b> Measure the distance each magnet moves a paper clip.

Ben's Data Table

Magnet	Distance Trial 1	Distance Trial 2	Distance Trial 3
 Ring Magnet	4 cm	7 cm	3 cm
 Marble Magnet	.5 cm	1 cm	1 cm
 Bar Magnet	8 cm	8 cm	9 cm
 Horseshoe Magnet	7 cm	5 cm	6 cm

Ben recorded a plan to study the force of magnets. Read Ben's science notebook. Use his data table to answer questions 13, 14, 15 and 16.

13. Which magnet moved the paper clip the greatest distance?

- A. Bar magnet
- B. Horseshoe magnet
- C. Marble magnet
- D. Ring magnet

14. What unit of measurement was used?

- A. Centimeters
- B. Inches
- C. Meters
- D. Millimeters

15. Which part of the experiment makes the results more accurate?

- A. Testing each magnet 3 times
- B. Recording test results
- C. Listing magnets tested
- D. Setting up a table for data

16. What is the one thing that stayed the same in this experiment?

- A. Distance the paper clip moved
- B. Force of the magnet
- C. Shape of the magnet
- D. Size of the paper clip

17. Which best describes why electrical wires are made of metal?

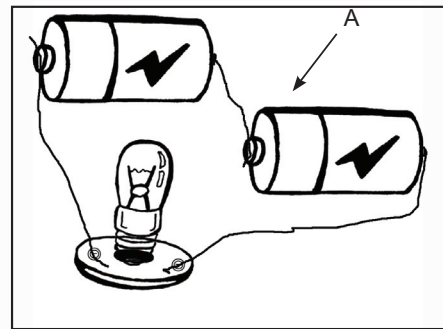
- A. Electricity moves well through metal
- B. Metal bends easily in a circle
- C. Metal wires are safe to use
- D. Metal wires attach easily to a battery

18. Which of these acts like a magnet?

- A. Atlantic ocean
- B. Blue Ridge mountains
- C. NC Emerald mine
- D. Planet earth

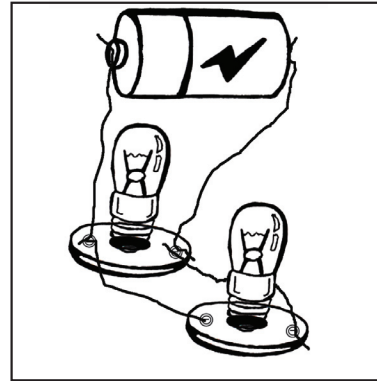
19. The bulb is lit in this picture. If wire A came loose, would the bulb change?

- A. It would be very dim
- B. It would not light
- C. It would remain lit
- D. It would shine brighter



20. Which best describes this picture?

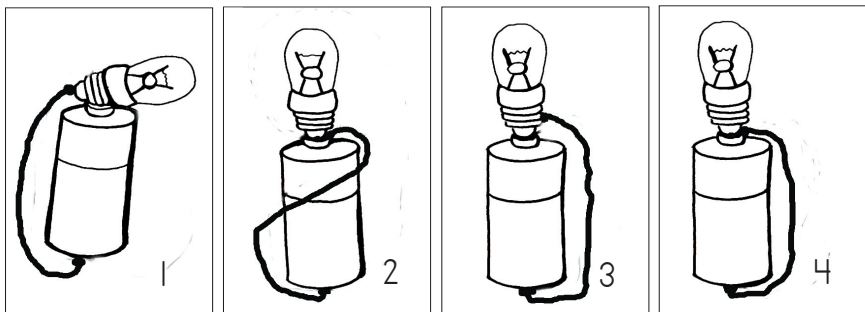
- A. A short circuit
- B. An incomplete circuit
- C. 2 bulbs in parallel
- D. 2 bulbs in a series



LOOK AT THE DRAWINGS.

21. Which bulbs will light?

- A. 1 and 2
- B. 1 and 3
- C. 3 and 4
- D. 4 and 2



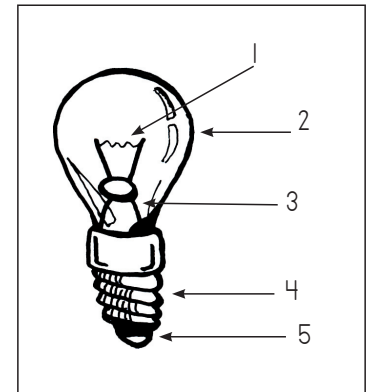
USE THE DRAWING TO ANSWER QUESTIONS 22 and 23.

22. Which part of the bulb gives off light?

- A. 1
- B. 2
- C. 3
- D. 4

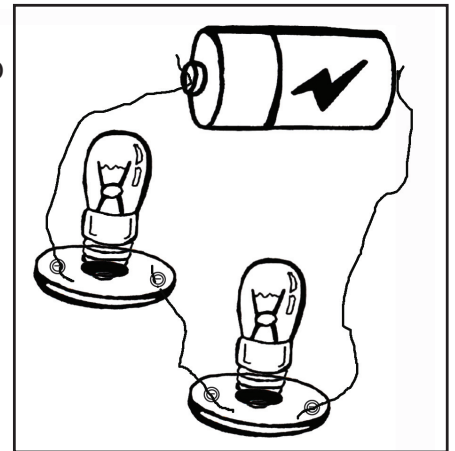
23. Alan builds a circuit to light a bulb. What parts of the bulb must be connected to the pathway of the circuit.

- A. 1 and 3
- B. 3 and 5
- C. 4 and 5
- D. 5 and 1



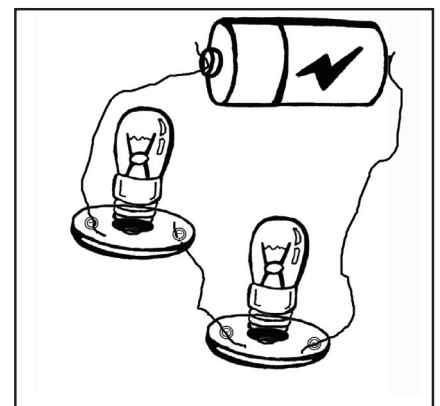
24. Look at the drawing. Is there a way to make the light bulbs shine brighter?

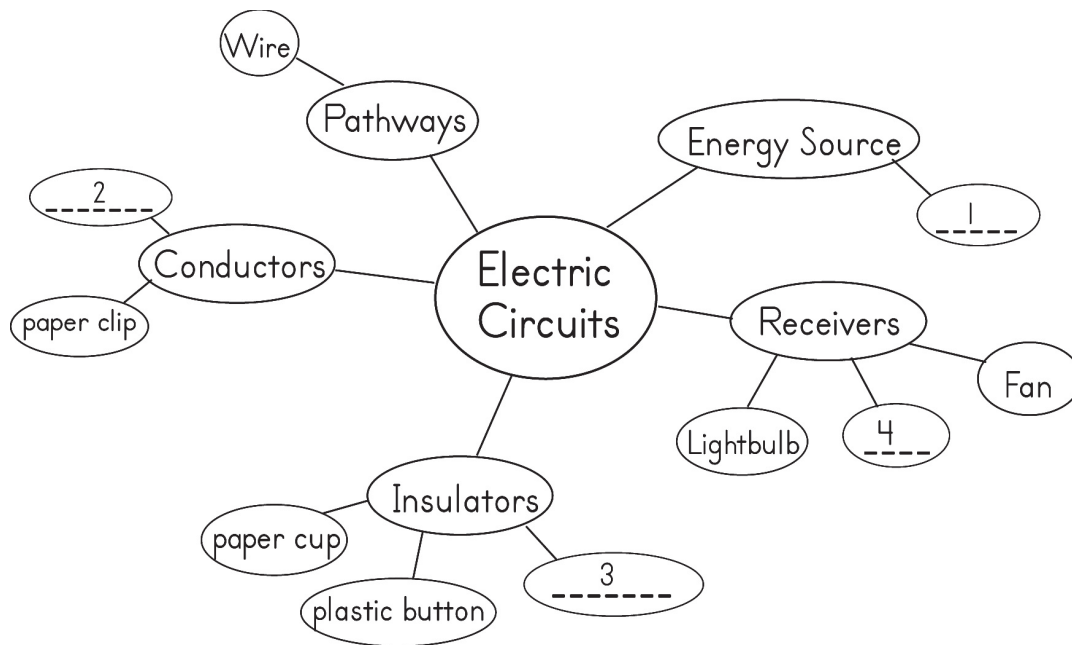
- A. Add another battery
- B. Add another light bulb
- C. Add another wire
- D. Use thicker wire



25. Which best describes this picture?

- A. A short circuit
- B. An incomplete circuit
- C. 2 bulbs in parallel
- D. 2 bulbs in a series





Look at the diagram.

USE THE DIAGRAM TO ANSWER QUESTIONS 26, 27, 28 and 29.

26. Choose the best object for space 1.

- A. Battery
- B. Light bulb
- C. Switch
- D. Wires

27. Choose the best object for space 2.

- A. Balloon
- B. Cotton yarn
- C. Metal spoon
- D. Plastic comb

28. Choose the best object for space 3.

- A. Coin
- B. Basketball
- C. Metal cup
- D. Wire screen



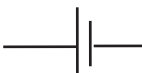
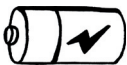




29. Choose the best object for space 4.

- A. Battery
- B. Magnet
- C. Radio
- D. Wires

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30. How does a switch change a circuit?

- A. An open switch completes the circuit
- B. The switch makes the battery stronger
- C. The switch keeps the wires from getting hot
- D. The switch stops and starts the flow of electricity

Symbol	Drawing	Meaning
		Bulb
		Battery
		Wire
		Switch

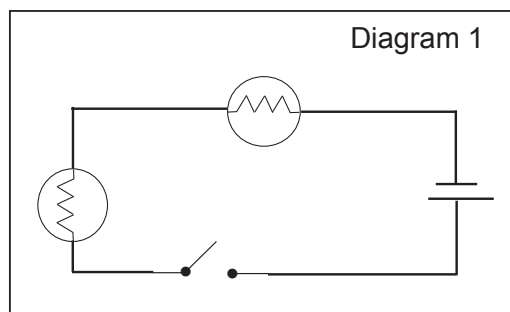
## Electrical Symbols Key

USE THE ELECTRICAL SYMBOLS KEY TO ANSWER QUESTIONS 31 and 32.

LOOK AT THE DIAGRAM 1.

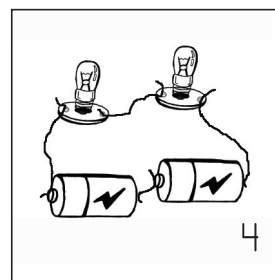
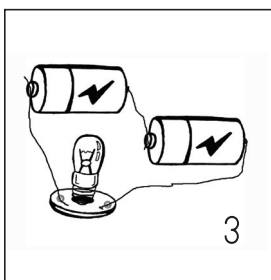
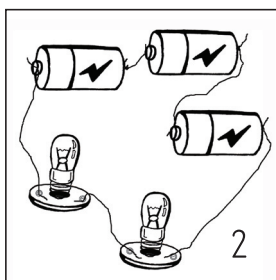
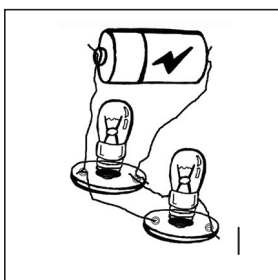
31. What is powering the circuit in Diagram 1?

- A. A bulb
- B. A battery
- C. A switch
- D. Two batteries



32. Which best describes the circuit in Diagram 1?

- A. A complete circuit with one receiver
- B. A complete circuit with two bulbs in parallel
- C. A complete circuit with two bulbs in a series
- D. A complete circuit with two energy sources



33. Look at Diagram 2. Which circuit above matches Diagram 2?

- A. 1
- B. 2
- C. 3
- D. 4

